

What is claimed is:

1. An apparatus for converting a two-dimensional image to a three-dimensional stereoscopic image to display the converted stereoscopic image on a display, comprising:

a current sample image acquisition unit for acquiring a current sample image, obtained by sampling a current input image provided by an image source;

a previous sample image acquisition unit for acquiring a previous sample image, obtained by sampling a previous input image provided by the image source;

a motion detector for detecting a moving pixel and a still pixel through comparison between corresponding pixels within the current and previous sample images;

a region splitting unit for splitting the current sample image into a plurality of search regions and generating a representative value of the moving pixel in each search region using information about the moving pixel detected by the motion detector;

a depth map generator for determining a moving pixel group constructing an object moving in each search region using the representative value of each search region and setting a small weight value for the moving pixel group, to generate a depth map image having the resolution of the original input image; and

a positive parallax processor for generating a left-eye image and a right-eye image such that the depth map image is displayed on the display in such a manner that the moving pixel group is located before the screen of the display and remaining
5 pixel groups are arranged behind the screen.

2. The apparatus as claimed in claim 1, wherein the motion detector detects the moving pixel by obtaining an absolute value of a difference between the corresponding pixels within the
10 current and previous sample images and comparing the absolute value with a predetermined threshold value.

3. The apparatus as claimed in claim 1, wherein the representative value of the moving pixel, generated by the region
15 splitting unit, is an average value or an intermediate value of moving pixels in each search region.

4. The apparatus as claimed in claim 3, wherein the depth map generator determines pixels having errors in a predetermined
20 range based on the representative value as the moving pixel group constructing the moving object.

5. The apparatus as claimed in claim 4, wherein the predetermined range is upper 25% and lower 25% relative to the representative value.

5 6. The apparatus as claimed in claim 1, wherein the depth map generator sets a relatively large weight value for the other pixel groups except the moving pixel group.

10 7. The apparatus as claimed in claim 1, wherein the positive parallax processor generates the left-eye image by shifting all the pixel groups in the depth map image by a first number of predetermined pixels to the left and shifting the moving pixel group by a second number of predetermined pixels to the left, and creates the right-eye image by shifting all the
15 pixel groups in the depth map of the original image by the first number of predetermined pixels to the right and shifting the moving pixel group by the second number of predetermined pixels to the right.

20 8. The apparatus as claimed in claim 1, further comprising an interpolator for interpolating a depth difference of the background and the moving object in the left-eye and right-eye images generated by the positive parallax processor.

9. The apparatus as claimed in claim 8, wherein the interpolator uses zero order interpolation (ZOI) and first order interpolation (FOI).